

**REVIEW OF DEMAND SIDE MANAGEMENT
(DSM) FRAMEWORK FOR NATURAL GAS
DISTRIBUTORS**

SUPPLEMENTAL REPORT

Prepared for:

The Ontario Energy Board

September 15, 2014



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TABLE OF CONTENTS

I. PURPOSE AND METHODOLOGY.....	1
II. SUMMARY OF UPDATED RESEARCH	3
III. EMERGING TRENDS AND CHALLENGES IN GAS DSM.....	23
IV. CONCLUSIONS AND RECOMMENDATIONS.....	24

The views expressed in this report are those of Concentric Energy Advisors and do not necessarily represent the views of, and should not be attributed to, the Ontario Energy Board, any individual Board member, or OEB staff.

I. PURPOSE AND METHODOLOGY

The Ontario Energy Board (“OEB”) retained Concentric Energy Advisors, Inc. (“Concentric”) to update sections of our 2010 report titled *Review of Demand Side Management (“DSM”) Framework for Natural Gas Distributors*. In particular, the OEB is seeking updated information regarding certain aspects of gas DSM programs in Canada and the United States, including the following:

- 1) Market size relative to natural gas consumption and number of customers by sector;
- 2) DSM budgets by sector;
- 3) Bill impacts of DSM budgets by sector;
- 4) DSM budgets as a percentage of distribution revenues by sector, excluding gas costs;
- 5) DSM budgets as a percentage of gross operational revenues by sector;
- 6) DSM metrics and targets;
- 7) Shareholder incentives;
- 8) Stakeholder engagement; and
- 9) Legislative and regulatory context – mandatory or voluntary participation and governing body responsible for establishing targets.

Concentric’s previous report was presented to the OEB in March 2010, and was based on program data for 2007 and 2008. This supplemental report is based on program data for 2012 and 2013, including DSM budgets, actual DSM expenditures, DSM targets, and DSM budgets as a percentage of revenues. While the primary focus of Concentric’s research is on providing updated information for the above categories, the supplemental report also offers historical context and trends by comparing the current state of gas DSM programs to the situation that was observed in the previous report.

Concentric’s previous report was based on information for five Canadian jurisdictions and twelve U.S. jurisdictions. The Canadian jurisdictions were selected because they were known to have gas distributors that were actively engaged in DSM activities, while the U.S. jurisdictions were selected on the basis of having the highest per capita¹ spending on gas DSM programs. Per capita spending served as a proxy for being the most actively engaged in implementing gas DSM programs.

¹ “Per capita” is defined as the average per person.

Ontario Energy Board – Supplemental Report – Review of Gas DSM

In this supplemental report, Concentric has provided information for the same five Canadian jurisdictions. In the U.S., the twelve jurisdictions in the updated report were selected on the basis of having the highest “Utility Program” score from the American Council for an Energy-Efficient Economy (“ACEEE”). The score is based on ACEEE’s assessment of each jurisdiction on the following factors: 1) 2012 electricity program budget; 2) 2012 gas program budget; 3) 2011 electricity program savings; 4) 2011 gas program savings; 5) adoption of an Energy Efficiency Resource Standard; and 6) performance incentives and fixed cost recovery.

Our revised screening criterion in the U.S. resulted in dropping three jurisdictions (i.e., Colorado, New Jersey, Wisconsin) that were part of the 2010 report and adding three new jurisdictions (i.e., Michigan, Rhode Island, Vermont). Concentric determined that it was reasonable to exclude Arizona (ranked 10th by ACEEE) because it has almost no gas DSM programs and to include Maine (ranked 15th) because it is more actively engaged in gas DSM programs after funding was restored in 2013. Table 1 lists the Canadian and U.S. jurisdictions that are included in the supplemental report.

Table 1: Jurisdictions in Concentric’s Updated Study

Canadian Provinces	U.S. States
Alberta	California
British Columbia	Connecticut
Manitoba	Iowa
Nova Scotia	Maine
Ontario	Massachusetts
Quebec	Michigan
	Minnesota
	New York
	Oregon
	Rhode Island
	Vermont
	Washington

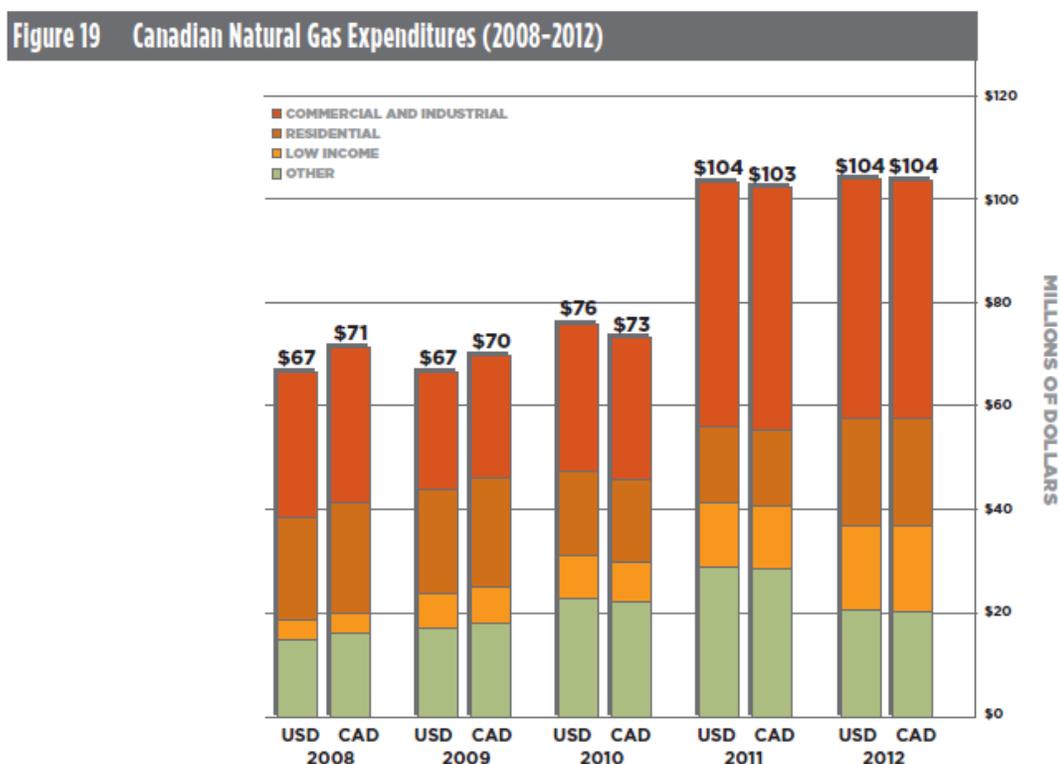
Concentric updated the jurisdictional information for gas DSM programs based on both primary and secondary research. We relied on reports published by the ACEEE, the Consortium for Energy Efficiency (“CEE”), and both the American Gas Association (“AGA”) and the Canadian Gas Association (“CGA”). In addition, Concentric gathered financial, operating and customer data from SNL Financial and from various reports filed by individual utilities with their respective utility

regulatory agencies in Canada and the U.S. The results of Concentric’s research are summarized in the following series of tables and charts in Section II.

II. SUMMARY OF UPDATED RESEARCH

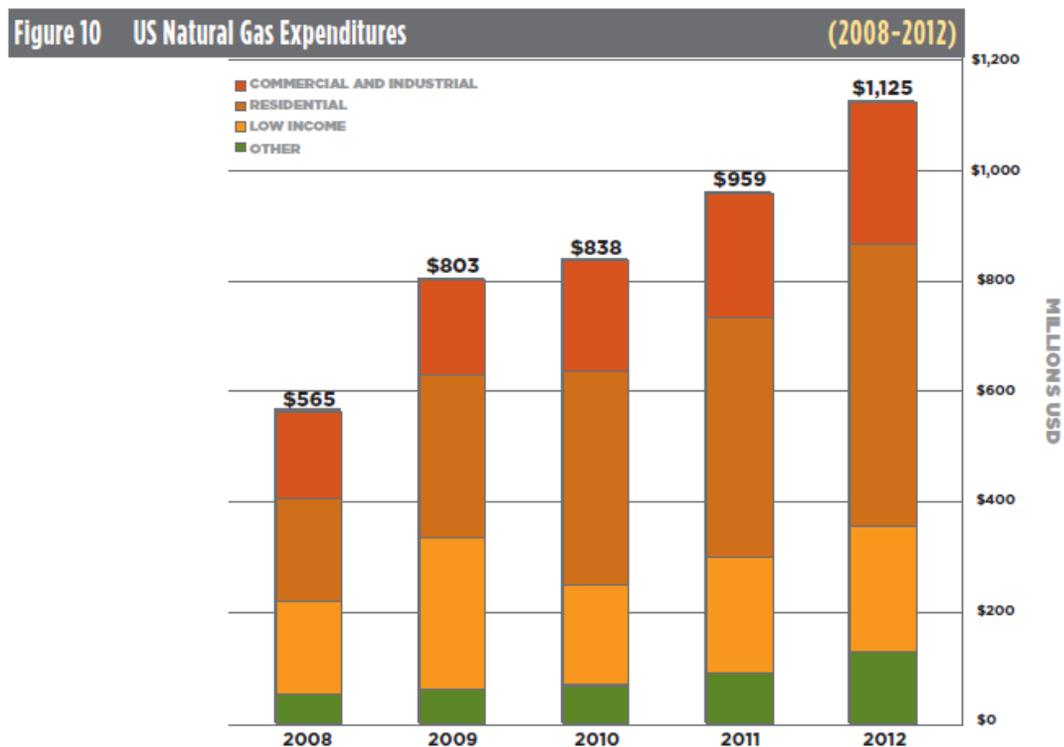
Before discussing our updated research for the nine specific elements of interest to the OEB regarding gas DSM programs, Concentric thought it would be useful to provide a comparison of how spending on gas DSM programs has changed in Canada and the U.S. in recent years. As shown on Chart 1, spending on gas DSM programs in Canada has increased by more than 46% from \$71 million in 2008 to \$104 million in 2012, with the largest increase in spending having taken place in 2011 and 2012. Similarly, as shown on Chart 2, spending on gas DSM programs in the U.S. has almost doubled from \$565 million in 2008 to \$1,125 million in 2012.

Chart 1: Canadian Natural Gas DSM Expenditures – 2008-2012²



² Consortium for Energy Efficiency, 2013 State of the Efficiency Program Industry, March 24, 2014, at 36.

Chart 2: U.S. Natural Gas DSM Expenditures – 2008-2012³



Gas efficiency programs are less widespread than electric programs, and thus funding is even more highly concentrated in a small number of states, where the top-10 states account for almost 80% of the national budget for gas efficiency programs. Specifically, gas efficiency spending is concentrated in about a dozen states in various regions: New York, Massachusetts, and New Jersey in the Northeast; Illinois, Michigan, Iowa, Minnesota and Wisconsin in the Midwest; and California, Oregon and Utah in the West.⁴ This list of states is slightly different than the jurisdictions shown in Table 1 because it is based solely on gas efficiency spending, while the U.S. jurisdictions in Concentric’s report were selected based on broader criteria, as discussed above.

³ Ibid, at 29.

⁴ Galen L. Barbose, Charles A. Goldman, Ian M. Hoffman, and Megan Billingsley, Ernest Orlando Lawrence Berkeley National Laboratory, “The Future of Utility Customer-Funded Energy Efficiency Programs in the United States: Projected Spending and Savings to 2025,” January 2013, at 11.

1) Market size relative to natural gas consumption and savings from gas DSM programs

As shown in Table 2, natural gas DSM program savings in 2012 as a percentage of 2011 retail sales ranged from 0.23% in Maine to 1.29% in Vermont, with average savings of approximately 0.71% for the twelve U.S. jurisdictions. It should be noted that retail sales in Table 2 include only those sales attributed to the residential and commercial sectors because that is how ACEEE reports the data.

Table 2: Gas DSM Program Savings as Percentage of Retail Sales – U.S.⁵

State	Total 2011 Retail Sales (m3)	2012 Natural Gas Program Savings (m3)	% of 2011 Retail Sales
California	21,556,065,882	73,290,624	0.34%
Connecticut	2,567,948,000	10,271,792	0.40%
Iowa	3,397,688,358	22,764,512	0.67%
Maine	241,405,217	555,232	0.23%
Massachusetts	5,989,308,148	64,684,528	1.08%
Michigan	13,662,450,337	121,595,808	0.89%
Minnesota	6,229,432,195	76,622,016	1.23%
New York	19,517,246,061	64,406,912	0.33%
Oregon	2,183,912,533	16,379,344	0.75%
Rhode Island	788,292,346	6,385,168	0.81%
Vermont	172,164,961	2,220,928	1.29%
Washington	4,071,701,333	18,322,656	0.45%
Average			0.71%

As shown in Table 3, natural gas DSM program savings in 2012 as a percentage of 2011 retail sales for a sample of Canadian jurisdictions ranged from 0.38% for FortisBC to 1.16% for Manitoba Hydro. By comparison, Enbridge achieved program savings equal to 0.78% of retail sales, while Union achieved saving of 1.45% of retail sales. Since Table 2 only includes retail sales to residential and commercial sectors for the U.S. jurisdictions, Concentric has adjusted the figures in Table 3 to only include retail sales for the residential and commercial sectors in Canada as well. While this allows for comparisons across U.S. and Canadian jurisdictions, Concentric recognizes that industrial

⁵ ACEEE, State Energy Efficiency Scorecard, November 2013. All program savings data are provided by ACEEE and are considered to be draft and subject to change. The original data from ACEEE were reported in MM therms; Concentric converted that data to cubic meters using a conversion factor of 2.77616.

Ontario Energy Board – Supplemental Report – Review of Gas DSM

sales represent a large percentage of overall retail sales in Canada, and that DSM programs in Canada have focused on achieving savings among industrial customers more than in the U.S. Unfortunately, data constraints make comparison between the U.S. and Canada less than perfect on this measure.

Table 3: Gas DSM Program Savings as Percentage of Retail Sales – Canada⁶

Province	Utility	Total 2011 Retail Sales (m ³)	2012 Natural Gas Program Savings (m ³)	% of 2011 Retail Sales
British Columbia	FortisBC	3,198,275,977	12,084,938	0.38%
Manitoba	Manitoba Hydro	1,237,520,000	14,400,000	1.16%
Ontario	Enbridge	7,707,211,000	60,135,753	0.78%
Ontario	Union	9,471,874,420	137,438,488	1.45%

Sources

British Columbia: Fortis Inc. 2011 Annual Report; FortisBC Energy Utilities, Energy Efficiency and Conservation Program, 2012 Annual Report.

Manitoba: Manitoba Hydro 2011/12 Annual Report; Manitoba Hydro 2011-2012 Power Smart Annual Review.

Ontario: Enbridge/Union DSM Annual Reports.

Concentric cautions that certain factors indicate that limited weight should be placed on the information in Tables 2 and 3 as a benchmark that can be used to set savings targets. In particular, the legislative and regulatory context for DSM programs varies across the jurisdictions in our study such that DSM programs are mandatory in certain jurisdictions and voluntary in others. Moreover, the jurisdictions in our study have differing levels of experience with DSM programs, which quite possibly could affect the level of savings that might be expected. Lastly, in spite of Concentric's best efforts to make the data and calculations in Tables 2 and 3 consistent, questions remain about exactly what is included in programs savings and total retail sales in each jurisdiction. For that reason, the percentage calculations should be viewed as indicative rather than definitive.

Concentric also researched the three U.S. jurisdictions which had achieved annual savings greater than 1% of retail sales in order to determine the legislative and regulatory context for those DSM programs. The following table is a short summary of that research for each jurisdiction.

⁶ Represents residential and commercial sales only. Retail sales were estimated by multiplying total gas sales for each Province by the percentage of total gas consumption from the residential and commercial sectors (as reported by Statistics Canada in its Revised 2011 Report on Energy Supply and Demand in Canada) for that Province.

Table 4: Legislative/Regulatory Context for U.S. Jurisdictions with High Annual Savings

State	Legislative/Regulatory Context
Massachusetts	Mandatory DSM program with targets set by gas distributors through the stakeholder process. In 2008, the governor signed a major energy reform bill, the Green Communities Act (S.B. 2768). This bill required electric and gas utilities to prioritize cost-effective energy efficiency and demand reduction resources over supply resources and ordered that utilities submit three-year plans outlining how they would meet the requirement. The bill also created the Energy Efficiency Advisory Council to play a key role in designing and reviewing utility plans designed to meet the requirements of the Green Communities Act. The three-year plans were developed through a comprehensive effort involving the state’s energy industry stakeholders and directed by the Department of Energy Resources. The Act requires that Program Administrators acquire all available cost-effective energy efficiency and demand reduction resources in the Commonwealth.
Minnesota	Mandatory DSM program with targets set legislatively. In 2007, the Minnesota legislature passed the Next Generation Energy Act (NGEA), which requires both electric and natural gas investor-owned utilities to reduce energy sales by 1.5% of average sales. Average sales are calculated based on the most recent three-year weather-normalized average. The NGEA requires investor-owned gas utilities to invest 0.5% of gross operating revenues in energy conservation improvements. Each utility must develop a Conservation Improvement Plan (CIP) every three years and file it with the Energy Division of the Department of Commerce
Vermont	Mandatory DSM programs with targets set by gas distributors. Vermont’s Energy Efficiency Resource Standard does not apply to natural gas utilities; however, there is a statutory mandate to acquire all cost-effective energy efficiency that applies to gas distributors as well as electric utilities. Natural gas efficiency programs are supported by legislation and regulation (<u>30 V.S.A. Section 235(d)</u> ; Docket No. 5270 VGS-1, 2) and began in 1993.

In most instances, information on gas DSM program savings by customer class is not readily available without extensive research of individual utility filings. Tables 5 and 6 provide gas DSM program savings by customer class for a sample of U.S. and Canadian jurisdictions where information was accessible.

Table 5: Gas DSM Program Savings by Customer Class for Select U.S. Jurisdictions⁷

	Year	Savings (m3)
Maine		
Residential	2013	916,133
C&I	2013	2,609,590
Massachusetts		
Residential	2012	30,934,898
Low Income	2012	3,467,143
C&I	2012	31,079,150
Oregon		
Residential	2013	5,773,080
Commercial	2013	6,053,653
Industrial	2013	2,913,427
Rhode Island		
Residential	2012	2,826,297
C&I	2012	3,553,651

Table 6: Gas DSM Program Savings by Customer Class for Select Canadian Jurisdictions

	Year	Savings (GJ)
British Columbia (FortisBC Energy)		
Residential	2013	140,403
Low Income	2013	17,659
Commercial	2013	310,729
Industrial	2013	23,476
Other	2013	5,566

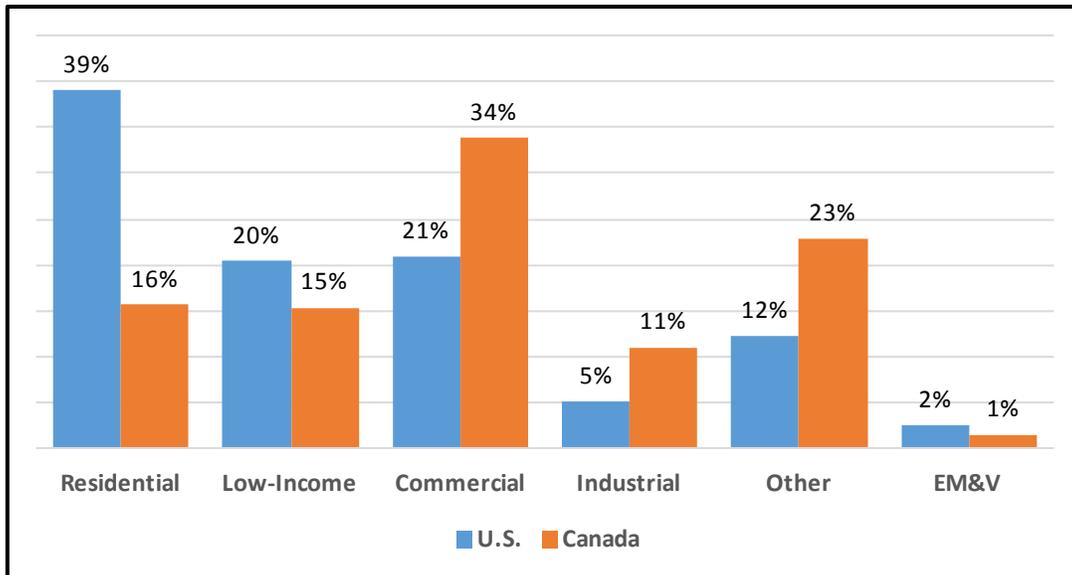
2) DSM budgets by Customer Class

As shown on Chart 3, the residential sector accounted for approximately 39% of gas DSM budgets in the U.S. in 2012, while the commercial and industrial sectors accounted for approximately 26% and the low-income sector represented 20%. In Canada, the focus of gas DSM programs has been on the commercial and industrial sectors rather than the residential sector. In 2012, the commercial and industrial sector accounted for approximately 45% of gas DSM budgets, while the residential sector accounted for approximately 16% and the low-income sector represented 15%. It should be

⁷ Savings were reported in therms. Concentric converted that amount to cubic meters using a conversion factor of 2.77616.

noted that Chart 3 is based on all U.S. and Canadian jurisdictions that responded to the CEE survey, not just those jurisdictions in Concentric’s study.

Chart 3: 2012 Gas DSM Budgets by Customer Class – U.S. and Canada⁸



Tables 7 and 8 provide gas DSM budgets by customer class for the 12 U.S. jurisdictions (2013) and the five Canadian jurisdictions (2012) in Concentric’s study. The figures in Table 7 demonstrate that the leading U.S. jurisdictions spend a somewhat higher percentage of their gas DSM budgets on the low-income sector (i.e., 25% vs. 20%) and somewhat less on the residential sector (i.e., 34% vs. 39%) than the national averages shown on Chart 1.

⁸ Consortium for Energy Efficiency, 2013 State of the Efficiency Program Industry, March 24, 2014, at 24-25. According to CEE, “other” refers to any spending that is not allocable to a single customer class.

Table 7: U.S. Gas Program Budgets, 2013 (Millions USD)

State	Residential	Low Income	Multi-Family	C&I	Other	Total Gas Program Budgets
California	34.3	68.4	10.7	74.2	72.8	260.4
Connecticut	8.6	1.7	1.4	7.3	3.1	22.1
Iowa	28.4	6.4	1.1	9.9	2.6	48.4
Maine	0.1	0.1	-	0.2	-	0.4
Massachusetts	81.1	33.2	29.5	21.8	-	165.6
Michigan	35.8	16.8	3.3	15.7	15.7	87.3
Minnesota	22.0	6.2	0.1	15.6	4.2	48.1
New York	50.6	79.3	14.1	31.0	-	175.0
Oregon	16.6	1.5	-	11.6	0.1	29.8
Rhode Island	7.5	4.1	-	6.7	-	18.3
Vermont	1.4	-	-	0.8	-	2.2
Washington	8.6	0.4	0.4	5.6	2.3	17.3

Source: Consortium for Energy Efficiency. State of the Efficiency Program Industry: Budgets, Expenditures, and Impacts 2013. <http://www.cee1.org/annual-industry-reports>, posted April 2014. © Copyright 2014 Consortium for Energy Efficiency. All rights reserved.

Table 8: Canadian Gas Program Budgets, 2012 (Millions CAD)⁹

Province	Residential	Low Income	C&I	Other	Total Gas Program Budgets
Alberta	N/A	N/A	N/A	N/A	N/A
British Columbia	9.9	5.0	9.8	5.0	29.7
Manitoba	2.5	0.8	5.1	1.6	10.0
Ontario	2.6	5.8	11.6	9.9	29.9
Quebec	0.8	0.5	15.4	-	16.7

Source: Consortium for Energy Efficiency. State of the Efficiency Program Industry: Budgets, Expenditures, and Impacts 2013. <http://www.cee1.org/annual-industry-reports>, posted April 2014. © Copyright 2014 Consortium for Energy Efficiency. All rights reserved.

As another point of comparison, Concentric also compared gas DSM budgets against electric energy efficiency budgets for the twelve U.S. jurisdictions in our study for 2012. As shown in Table 9, gas DSM budgets were equal to approximately 23% of electric energy efficiency budgets for these U.S. jurisdictions. This is a very similar percentage to the overall U.S. average of 22%, as reported by ACEEE for 2012.

⁹ The numbers in this table are based on utility responses to a survey by CEE, and do not include all gas distribution utilities in each province.

Table 9: 2012 Gas DSM Budgets vs. Electric Efficiency Budgets - U.S.¹⁰

State	2012 Electric Efficiency Budget	2012 Natural Gas Efficiency Budget	Gas as % of Electric
California	1,166.6	263.7	22.60%
Connecticut	128.1	19.1	14.91%
Iowa	90.6	46.7	51.55%
Maine	23.4	0.5	2.14%
Massachusetts	515.7	137.0	26.57%
Michigan	169.2	83.9	49.59%
Minnesota	156.0	42.9	27.50%
New York	668.9	154.7	23.13%
Oregon	153.0	31.4	20.52%
Rhode Island	61.4	13.7	22.31%
Vermont	39.3	2.0	5.09%
Washington	344.8	23.0	6.67%
Total	3,517.0	818.6	23.28%

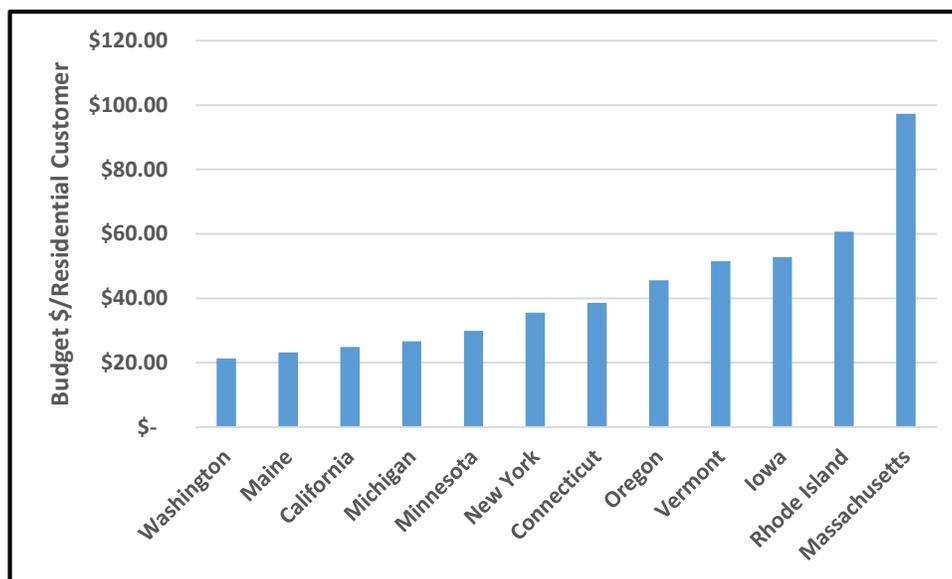
3) Bill impacts of DSM budgets by sector

Chart 4 provides the gas DSM budget dollars per residential customer for the twelve U.S. jurisdictions in 2012. As shown on Chart 4, 2012 total gas DSM budgets for the U.S. jurisdictions in our study ranged from slightly more than \$20 per residential customer per year in Washington to almost \$100 per residential customer per year in Massachusetts. According to the AGA, residential natural gas efficiency program participants in the U.S. saved on average 13% of household gas usage, or about 99 Therms per year, averaging \$107 in cost saving on their annual energy bill.¹¹

¹⁰ Source: ACEEE 2013 State Scorecard, Tables 11 and 12.

¹¹ AGA, Natural Gas Efficiency Programs Report – 2011 Program Year, January 2013, at 2.

Chart 4: 2012 Gas DSM Budget Dollars per Residential Customer¹²



4) DSM budgets as a percentage of revenues

Concentric calculated gas DSM budgets as a percentage of both gross operating revenues and gas distribution revenues for a sample of companies that provide service in the U.S. and Canadian jurisdictions in our study. As shown in Table 10, the DSM budget for gas distributors in the twelve U.S. jurisdictions represented approximately 3.54% of gross operating revenues¹³ and 7.52% of gas distribution revenues.¹⁴ By comparison, Concentric’s previous report indicated that actual expenditures on gas DSM programs (which are normally less than approved DSM budgets) in the U.S. were equal to approximately 1.14% of gross operating revenue and 3.90% of gas distribution revenues. Table 11 shows that the DSM budget for gas distributors in the Canadian jurisdictions in our study represented approximately 2.77% of gross operating revenues and 5.67% of gas distribution revenues (excluding the cost of gas). By comparison, our previous report indicated that actual expenditures on gas DSM programs in Canada were equal to approximately 0.70% of gross operating revenue and 2.01% of gas distribution revenue.

¹² Based on DSM budget data provided by ACEEE.

¹³ Gross Operating Revenue represents total revenues from gas operations, including transportation revenues and the cost of gas supply.

¹⁴ Gas distribution revenue represents Gross Operating Revenue less gas supply costs.

Table 10: Gas DSM Budget as % of Gross Operating Revenues and Gas Distribution Revenues – U.S.¹⁵

State	Utility	Year	Gross Operating		Gas DSM Budget	DSM as % of GOR	Gas Distribution Revenue	DSM as % of Gas Dist Revenue
			Revenue (GOR)	Cost of Gas				
California	Southern California Gas	2013	\$ 3,736,000,000	\$ 1,362,000,000	\$ 210,288,351	5.63%	\$ 2,374,000,000	8.86%
Connecticut	Yankee Gas	2013	\$ 423,730,205	\$ 166,853,000	\$ 8,263,050	1.95%	\$ 256,877,205	3.22%
Iowa								
Maine								
Massachusetts	National Grid	2011	\$ 1,508,871,000	\$ 854,461,000	\$ 93,106,711	6.17%	\$ 654,410,000	14.23%
Michigan								
Minnesota	Xcel Energy	2013	\$ 591,017,000	\$ 380,058,000	\$ 13,616,878	2.30%	\$ 210,959,000	6.45%
New York								
Oregon	NW Natural Gas	2013	\$ 746,184,000	\$ 373,298,000	\$ 24,493,635	3.28%	\$ 372,886,000	6.57%
Rhode Island	National Grid	2012	\$ 390,944,000	\$ 214,131,000	\$ 13,700,000	3.50%	\$ 176,813,000	7.75%
Vermont	Vermont Gas Systems	2013	\$ 98,347,000	\$ 59,361,000	\$ 1,884,000	1.92%	\$ 38,986,000	4.83%
Washington								
Average						3.54%		7.42%
Median						3.28%		6.57%

Table 11: Gas DSM Budget as % of Gross Operating Revenues and Gas Distribution Revenues – Canada¹⁶

Province	Utility	Year	Gross Operating		Gas DSM Budget	DSM as % of GOR	Gas Distribution Revenue	DSM as % of Gas Dist Revenue
			Revenue (GOR)	Cost of Gas				
British Columbia	FortisBC	2013	\$ 1,162,000,000	\$ 531,000,000	\$ 35,600,000	3.06%	\$ 631,000,000	5.64%
Manitoba	Manitoba Hydro	2013	\$ 329,000,000	\$ 182,000,000	\$ 14,300,000	4.35%	\$ 147,000,000	9.73%
Ontario	Enbridge	2012	\$ 2,214,000,000	\$ 1,199,000,000	\$ 30,910,000	1.40%	\$ 1,015,000,000	3.05%
Ontario	Union Gas	2012	\$ 1,365,000,000	\$ 638,000,000	\$ 30,954,000	2.27%	\$ 727,000,000	4.26%
Average						2.77%		5.67%
Median						2.67%		4.95%

Enbridge Gas Distribution’s (“EGD”) DSM budget in 2012 was \$30,910,000, which is equal to 3.05% of EGD’s gas distribution revenues for 2012. Union Gas’ (“Union”) DSM budget in 2012 was \$30,954,000, or 4.26% of Union’s gas distribution revenues for 2012.¹⁷

¹⁵ Source: SNL Financial. Gross Operating Revenue represents total revenues from gas operations, including transportation revenues and the cost of gas supply. Gas distribution revenue represents Gross Operating Revenue less gas supply costs. Cost of gas represents the cost of purchased gas, adjusted for injections to and withdrawals from storage, and any other costs associated with the purchase of gas that would normally be included in the gas cost adjustment mechanism.

¹⁶ Source: SNL Financial. Gross Operating Revenue represents total revenues from gas operations, including transportation revenues and the cost of gas supply. Gas distribution revenue represents Gross Operating Revenue less gas supply costs. Cost of gas represents the cost of purchased gas, adjusted for injections to and withdrawals from storage, and any other costs associated with the purchase of gas that would normally be included in the gas cost adjustment mechanism.

Analysis

In our previous report, Concentric recommended that the OEB consider establishing a DSM budget equal to between 4% and 6% of gas distribution revenues. As shown in Table 10, five of the seven U.S. utilities (Southern California Gas, National Grid in Massachusetts and Rhode Island, Northern States Power in Minnesota, and Northwest Natural Gas in Oregon) had gas DSM budgets in 2012/13 greater than 6% of gas distribution revenue, with an average of 7.42% and a median of 6.57%. In Canada, as shown in Table 11, Concentric has budget data for two gas utilities other than those in Ontario. FortisBC has a DSM budget equal to 5.64% of gas distribution revenue, and Manitoba Hydro's gas DSM budget is 9.73% of gas distribution revenue. In summary, Concentric's research indicates that a DSM budget equal to 6% of gas distribution revenue would be somewhat lower than most U.S. jurisdictions in our study for which data are available and within the range established for gas distributors in British Columbia and Manitoba Hydro.

5) DSM metrics and targets

Since our original report was submitted to the OEB in March 2010, many U.S. jurisdictions have adopted an Energy Efficiency Resource Standard ("EERS"), which is a policy that sets long-term mandatory gas savings targets for utilities and efficiency program administrators.¹⁸ ACEEE reports that 26 U.S. states have adopted an EERS. Of the 26 states with EERS policies in place in 2011 and 2012, 15 had mandatory savings targets for natural gas.¹⁹

Natural gas targets tend to require lower levels of savings than electricity targets in percentage terms. For example, in 2012, natural gas savings targets ranged from about 0.1% of retail sales up to 1.0% of retail sales. States typically set targets based on studies that predict the available cost-effective efficiency within the state or on their prior experience with implementing efficiency programs. Alternatively, they may adopt targets like those of neighboring states with similar economic and environmental conditions. Further, states typically choose to ramp up targets, reaching large-scale savings over the course of several years.²⁰

¹⁷ Source: OEB Staff, based on utility filings with the Board.

¹⁸ ACEEE, Energy Efficiency Resource Standards: A New Progress Report on State Experience, April 2014, at iv-v.

¹⁹ Ibid, at v.

²⁰ Ibid, at 17.

Ontario Energy Board – Supplemental Report – Review of Gas DSM

As shown in Table 12, all twelve U.S. jurisdictions in our study have enacted an EERS for gas distribution companies, and ten of the twelve 12 states have binding targets for natural gas under EERS. In addition, seven of the twelve states require gas distributors to pursue all cost-effective DSM programs

Table 12: Energy Efficiency Resource Standards and Savings Requirements²¹

State	EERS Enacted	Binding Targets for Natural Gas under EERS	% of 2012 Savings Target Met	All Cost-Effective Mandate	Natural Gas Savings Requirements
California	2004	✓	122%	✓	Targets vary by utility; 619 MMTherms in gross savings from 2012-2020
Connecticut	2007	✓	69%	✓	Average annual sales of ~60 MMTherms through 2015
Iowa	2009	✓	98%		Varies by utility from 0.74-1.2% annually through 2014
Maine	2009	✓	43%	✓	Savings of 20% by 2020, with annual savings targets of ~0.3% for gas utilities
Massachusetts	2009	✓	92%	✓	0.63% in 2010, 0.83% in 2011, 1.0% in 2012, 1.1% in 2013, increasing to 1.15% by 2015
Michigan	2008	✓	125%		0.10% annual savings in 2009, ramping up to 0.75% in 2012 and continuing through 2015
Minnesota	2007	✓	128%		0.75% annual savings from 2010-2012; 1% annual savings in 2013 and thereafter
New York	2008	✓	44%		~14.7% cumulative savings by 2020
Oregon	2010	✓	135%		0.2% of sales in 2010, ramping up to 0.4% in 2014
Rhode Island	2006	✓	99%	✓	Annual savings of 0.6% in 2012, 0.8% in 2013, and 1.0% in 2014
Vermont	2000		--	✓	
Washington	2006		--	✓	

By contrast, the Canadian jurisdictions in our study have not formally adopted EERS or any comparable policy that sets mandatory long-term savings targets for utilities or efficiency program administrators. In Ontario, the government has established savings targets for electricity; however, there are no requirements for natural gas distributors.

²¹ Source: ACEEE, Energy Efficiency Resource Standards: A New Progress Report on State Experience, April 2014

Analysis

As shown in Table 12, ten of the 12 U.S. jurisdictions in our study have binding savings targets that generally range between 0.40% and 1.20% per year. In its report, Toronto Atmospheric Fund (“TAF”) has recommended a savings target of at least 1% of total gas sales, which would be on the very high end of what most U.S. jurisdictions in our study require. Among the U.S. jurisdictions in our study, only three states (Massachusetts, Minnesota, and Rhode Island) have adopted annual savings target of 1% or more. Savings targets in California and Connecticut are based on total therms for the entire state over a period of time rather than utility-specific targets. Based on our jurisdictional research, a savings target of approximately 0.75% to 0.85% in Ontario would be consistent with savings targets established in the U.S. jurisdictions in our study. The Board might also consider gradually increasing the savings target over the term of the DSM plan, starting from current levels for Enbridge and Union and increasing to 0.75%-0.85%, in order to encourage gas distributors to more aggressively pursue deep savings.

6) Shareholder incentives

According to ACEEE, shareholder incentives are an important component of achieving gas DSM savings targets. In particular, U.S jurisdictions with an EERS almost always combine that policy with cost recovery mechanisms and shareholder incentives. ACEEE explains this approach as follows:

In themselves, EERS policies are a key strategy that helps regulators, policymakers, and utilities plan ahead for a state’s energy future. However, to be most effective, the targets must be paired with some other regulatory function, a carrot or a stick to spur utilities to action. Financial penalties for not meeting targets are largely clustered in mid-western states, possibly due to neighboring states influencing each other. More typically, states choose to reward utilities for meeting savings targets. Eighteen of the states in this report have financial performance incentives in place or pending for electric utilities, and 12 make financial performance incentives available for natural gas utilities. Nearly every state in the country has some sort of cost recovery in place that allows utilities to recover direct program costs for efficiency measures; however, many states have taken steps beyond cost recovery. Many of the states with the highest savings targets also have established mechanisms to remove the throughput incentive, which is the link between increased energy sales and increased profits under traditional regulation. These mechanisms address one of the fundamental policy barriers to increased energy efficiency, namely that utilities have

not traditionally viewed energy efficiency as part of their business model but as a threat to their revenue.²²

As shown in Table 13, ten of the twelve U.S. jurisdictions in our study have implemented either revenue decoupling mechanisms or lost revenue adjustment mechanisms. In addition, seven of the twelve U.S. jurisdictions have performance incentives to promote gas DSM programs. No U.S. jurisdiction in our study uses penalty mechanisms related to failure to spend a certain amount on gas DSM programs.

Table 13: Cost Recovery and Financial Incentives for Gas DSM Programs – U.S.

State	Decoupling or LRAM	Performance Incentives	Penalty Mechanisms
California	✓	✓	
Connecticut	✓	✓	
Iowa			
Maine			
Massachusetts	✓	✓	
Michigan	✓	✓	
Minnesota	✓	✓	
New York	✓	✓	
Oregon	✓		
Rhode Island	✓	✓	
Vermont	✓		
Washington	✓		

Source: ACEEE, Energy Efficiency Resource Standards: A New Progress Report on State Experience, April 2014

The AGA reports that 38 states permit utilities to recover natural gas efficiency program costs, 31 states allow utilities to recoup lost margins related to program implementation, and 18 states approve shareholder incentives to reward efficiency program implementation or performance.²³ Table 14 shows the various shareholder incentives that are used in the U.S., based on an AGA survey.

²² ACEEE, Energy Efficiency Resource Standards: A New Progress Report on State Experience, April 2014, at v.

²³ AGA, Natural Gas Efficiency Programs Report – 2011 Program Year, January 2013, at 49.

Table 14: Financial Incentives for Gas DSM Programs

Financial Incentive	Programs	States
Shared Savings	8	5
Rate of Return Incentive	5	4
Financial Reward/Bonus Opportunity for Meeting Performance Target(s)	25	4
Other Mechanisms	4	4
Combination of Mechanisms	4	4

Source: American Gas Association, Natural Gas Efficiency Programs Report, 2013 (Reflective of 2011 Program Year).

Table 15 summarizes performance incentives for a sample of our U.S. jurisdictions.

Table 15: Shareholder Incentives for Select U.S. Jurisdictions

State	Financial Incentive
California	California implemented an updated performance incentive mechanism in September 2013 to be applied to the 2013-14 energy efficiency program cycle and beyond. For 2013 and 2014, California’s electric and gas IOUs can earn rewards of up to \$89 million across all utilities on average before taxes each year. This is equivalent to about 9% of the two-year efficiency portfolio cycle’s \$1.9 billion budget. However, the cap is set at a very high level of performance, so expected earnings are closer to \$60 million on average before taxes each year. The potential earnings are based on net lifecycle energy and demand savings from programs using linear functions up to 9% of resource program expenditures at very aggressive levels of savings beyond the CPUC’s goals, with the linear earnings curve for natural gas rewarding savings at \$21,331 per MMTh.
Connecticut	Performance incentives of 5% of DSM budget for achieving 100% of savings target in 2013. Plan offers 2% financial incentive starting at 70% of savings target up to 8% financial incentive at 130% of savings target.
Massachusetts	Efficiency program provides total performance incentives of \$5.6 million per year for gas distribution utilities (or 3.35% of total program costs for 2013) for the three year program period from 2013-2015. The incentive pool is allocated among individual gas distributors by the Department of Public Utilities based on the dollar benefits target each year, with higher incentives for higher savings targets. A gas distributor must achieve at least 75% of its savings target in order to be eligible for a performance

	incentive. The statewide savings target for 2013 was 1.1% of retail energy sales. The efficiency program plan indicates that performance incentive caps will be determined at a future date, but that caps may be eliminated in order to encourage aggressive deployment of all cost-effective energy efficiency. ²⁴
Michigan	State statute (460.1075) provides that rate-regulated utilities may include in their Energy Optimization Plan an incentive for exceeding their energy savings requirement for a program year. The incentive is the lesser of either 1) 25% of the customer bill savings as a result of implementation of energy efficiency programs or 2) 15% of the utility's actual program expenditures for the year.
New York	New York implemented a revised incentive mechanism for utilities administering efficiency programs in March 2012, which is applicable to years 2012 through 2015. Formulaic incentives will be awarded on a positive basis only (i.e., penalty mechanisms were eliminated), and the total amount of potential incentive awards is smaller, on an annual basis, than the potential incentives under the previous mechanism. Utilities will be eligible for incentives not only for achievement of their own targets, but also for the achievement of statewide goals. A total incentive pool of \$14 million was established for gas utilities over the four year period, which is equal to approximately five basis points on equity per year, or 20 basis points over the life of the program. The order implies the incentive pool is equal to approximately 5% of gas DSM spending. A cap on the total incentive award for any individual utility of 60 basis points over the four year period. Incentives are awarded for achieving various savings targets, ranging from 0% incentive for 80% savings to 100% incentive for 100% savings.
Rhode Island	National Grid financial incentive of 4.52% of approved DSM budget in 2012 based on achieving 107% of its savings target for that year. The shareholder incentive is earned by sector. An incentive is earned if savings in a sector fall between 60% and 125% of the savings goal for that sector. An enhanced incentive up to 125% of the target incentive is available for achieving greater savings than the savings target. A cost efficiency feature of the incentive design can adjust the calculated incentive under certain conditions, for example, if a sector achieves more than 100% of its savings while spending less than 95% of its budget.

Analysis

Concentric's understanding is that the OEB's current DSM framework offers a maximum shareholder incentive of \$10.5 million per utility (or approximately 34% of the DSM budget for Enbridge and Union) when the utility meets 150% of the savings target, and an incentive of \$4.2 million per utility (or approximately 14% of the DSM budget for Enbridge and Union) when the

²⁴ 2013-2015 Massachusetts Joint Statewide Three-Year Electric and Gas Efficiency Plan April 30, 2012 Submission to EEAC, at 3 and 54.

Ontario Energy Board – Supplemental Report – Review of Gas DSM

utility meets 100% of the savings target. Based on our research of shareholder incentives, Concentric's view is that a shareholder incentive of \$4.2 million for achieving 100% of savings targets is at the high end of other U.S. jurisdictions in our study. The majority of incentives for 100% performance appear to be in the range of 3.5% to 9% of the DSM budget, with many clustered around 5%. As noted above, the Michigan statutes permit utilities to earn financial incentives for exceeding the performance standard. The incentives are equal to the lesser of (1) 15% of the provider's actual energy efficiency program expenditures for the year, or (2) 25% of the net cost reductions experienced by the provider's customer as a result of the EE program.

With respect to the current \$10.5 million incentive for achieving 150% of savings targets, the current DSM framework in Ontario offers maximum incentives that are much higher than any other U.S. jurisdiction that Concentric reviewed. For example, Connecticut allows gas utilities to earn incentives of 8% of the DSM budget for achieving 130% savings. Massachusetts has mentioned that it may remove caps on the incentive in order to encourage continued aggressive deployment of all cost-effective energy efficiency, but no decision has been made at this time.

Concentric has reviewed the information provided by TAF on the matter of shareholder incentives. TAF analyzes shareholder incentives on two different metrics: 1) as a percentage of DSM budget; and 2) as a percentage of DSM budget normalized for sales. On the first metric, Concentric's research is generally consistent with the results and conclusions in the TAF report. Specifically, the maximum shareholder incentives in Ontario are very high relative to other jurisdictions on the basis of incentives as a percentage of DSM budgets, while the incentives for achieving 100% of savings targets are at the high end of U.S. jurisdictions in our study. With respect to the second metric, Concentric has gathered sales data for selected U.S. gas utilities in Connecticut and Rhode Island. As shown in Table 16, when normalized for sales, the maximum shareholder incentives in Ontario are somewhat lower than those in Connecticut and Rhode Island. In Concentric's view, the most relevant metrics to establish shareholder incentives are 1) as a percentage of DSM budget, and 2) based on actual savings achieved as a result of the DSM program compared to savings targets.

Table 16: Maximum Shareholder Incentive as % of DSM Budget, Normalized for Sales²⁵

Utility	Jurisdiction	Total Gas Sales (m3)	Gas Sales Year	Total DSM Budget*	Budget Reference Year	DSM Budget per m3 Sales	Max. Utility Incentive	Max. Utility Incentive as % of DSM Budget	Max. Utility Incentive per 1000 m3
Narragansett Electric	Rhode Island	594,651,001	2012	\$ 12,963,094	2012	\$ 0.0218	\$ 585,932	4.52%	\$ 0.99
Connecticut Natural Gas	Connecticut	755,441,164	2012	\$ 12,118,350	2013	\$ 0.0160	\$ 969,468	8.00%	\$ 1.28
Southern CT Gas	Connecticut	619,008,751	2012	\$ 10,426,682	2013	\$ 0.0168	\$ 834,135	8.00%	\$ 1.35
Yankee Gas	Connecticut	662,952,283	2012	\$ 11,886,500	2013	\$ 0.0179	\$ 950,920	8.00%	\$ 1.43
Enbridge	Ontario	10,499,300,000	2012	\$ 30,910,000	2012	\$ 0.0029	\$ 10,500,000	33.97%	\$ 1.00
Union Gas	Ontario	14,617,390,000	2012	\$ 30,954,000	2012	\$ 0.0021	\$ 10,500,000	33.92%	\$ 0.72

Finally, Concentric observes that several U.S. jurisdictions (Massachusetts, Connecticut, New York, and Rhode Island) allow utilities to start earning shareholder incentives for achieving less than 100% of savings targets. The current DSM framework in Ontario gives gas distributors the opportunity to start earning incentives for achieving at least 75% of targets. This is consistent with our research on other U.S. jurisdictions.

7) Stakeholder engagement

Several U.S. jurisdictions in our study require formalized stakeholder engagement processes (e.g., Rhode Island, Connecticut, and Massachusetts each has a formal stakeholder process in place). Stakeholder boards in these states ensure that a variety of interests have a seat at the table. Environmental groups, commercial businesses, industrial customers, consumer advocates, residential and low-income stakeholders, utilities, and government representatives all participate in regular stakeholder meetings in these jurisdictions. During these meetings, members work together to formalize targets for each planning cycle. Stakeholders also collaborate on other aspects of efficiency programming such as data collection and aggregation.²⁶

8) Legislative and regulatory context – mandatory or voluntary participation and governing body responsible for establishing targets

According to the AGA, many state policy makers mandate that utilities invest in natural gas efficiency programs. Specifically, 29 states require utilities to fund efficiency programs by way of

²⁵ Budget/incentive amounts for Canadian LDCs are in CDN\$ and budget/incentive amounts for US LDCs are in US\$.

²⁶ ACEEE, Efficiency Resource Standards: A New Progress Report on State Experience, April 2014, at 26.

regulatory order (22 states), legislation (11 states) or through both regulation and legislation (16 states).²⁷ The policy goals that drive efficiency programs in the U.S. are shown in Table 17.

Table 17: Policy Goals Driving Efficiency Programs – U.S.²⁸

Goals	Number of Programs	Number of States
Increase Energy Savings	82	29
Reduce Customer Energy Bills	45	22
Reduce Usage for Low Income Customer	36	17
Reduce GHG or Carbon Emissions	32	13
Create Green Jobs	15	6
Reduce Supply/Infrastructure Costs	14	8
Renewable Portfolio Standards	9	7
Meet Electric DSM Requirements	8	6

As discussed earlier in this supplemental report, EERS targets are often enacted by the state legislature, while the authority for creating a DSM implementation framework tends to lie with the regulatory board or commission. The utility regulator usually determines which entity will implement efficiency programs: gas distribution utilities, a third party administrator, or both. Since utility regulators in the U.S. often oversee only a subset of retail energy suppliers, EERS targets tend to apply exclusively to regulated utilities. Many states also include stipulations regarding the size of a participating utility’s customer base (e.g., utilities with more than 10,000 customers must comply), or they limit savings targets to investor-owned utilities. Such stipulations ultimately limit overall savings by diminishing the customer base.²⁹

Several states (e.g., Vermont, Maine and Oregon) have chosen to make a third party responsible for administering gas DSM programs. As shown in Table 18, approximately 67% of gas DSM programs are administered by the gas distribution company, while 28% are administered by the utility in conjunction with a third party, and 5% are administered by one or more third party organizations.

²⁷ AGA, Natural Gas Efficiency Programs Report, January 2013, at 48.

²⁸ Ibid.

²⁹ ACEEE, Efficiency Resource Standards: A New Progress Report on State Experience, April 2014, at 8.

Table 18: Administration of Gas DSM Programs – U.S.

	Programs*	%
Utility-Administered	77	67%
Non-Profit Organization	6	3%
Utility Working with Other Entities	29	28%
Two or More Non-Utility Entities	2	2%

Source: American Gas Association, Natural Gas Efficiency Programs Report, 2013

* Out of a total of 115 programs offered by utilities with natural gas service territories in 39 states and in Canada.

Funding for gas efficiency programs typically comes from a public benefits charge or through rate recovery, and these funds may be transferred to a third-party program administrator that does not have a disincentive to implement efficiency. (Since efficiency may reduce sales, a utility may have such a disincentive under a traditional rate structure.) In Wisconsin and Maine, the third-party efficiency administrator is directly responsible for all savings stipulated in the EERS. Many states have a mix of third-party and utility responsibility, and others include state agencies in the savings targets. For example, the New York State Energy Research and Development Authority is responsible for a portion of that state’s energy savings targets, while in Illinois the Department of Commerce and Economic Opportunity is responsible for a specific set of efficiency measures.³⁰

III. EMERGING TRENDS AND CHALLENGES IN GAS DSM

During the course of our research, Concentric also identified the following emerging trends and challenges in gas DSM programs that might be of interest to the OEB and its Staff.

- Funding challenges:
 - Across all states, these [funding] challenges are further heightened during periods of economic hardship. Concerns about rate impacts from energy efficiency programs have been institutionalized in a number of states, either through explicit caps on spending or rate impacts, or by the application of the ratepayer impact measure (“RIM”) test.
 - Michigan has spending caps in its EERS legislation. In 2011, the Maine state legislature decided not to fully fund the third-party efficiency program administrator.

³⁰ ACEEE, Efficiency Resource Standards: A New Progress Report on State Experience, April 2014, at 8.

However, in June 2013, Maine passed legislation that re-allocated and expanded funding to Efficiency Maine for implementation of energy efficiency programs.³¹

- In many U.S. states, energy savings in the large commercial and industrial markets are, in effect, beyond the reach of program administrators. This is especially true for gas efficiency programs, as large commercial and industrial customers often purchase natural gas on the competitive market through alternative retailers, and may not pay into or be able to participate in gas utility customer-funded energy efficiency programs. This “transportation gas” accounts for 46% of total U.S. gas sales and 79% of all commercial and industrial sales. The ability for many states to significantly increase gas efficiency program savings and spending may therefore hinge, to a large degree, on whether mechanisms can be developed (e.g., non-bypassable charges for program funding) to bring these customers and savings opportunities into the program fold.³²

IV. CONCLUSIONS AND RECOMMENDATIONS

At an intuitive level, there is a connection between savings targets, DSM budgets, and shareholder incentives. In other words, if regulators are seeking to design efficiency programs that achieve higher savings targets, it is necessary to approve DSM budgets that allow gas distributors to pursue all cost-effective efficiency programs, and to provide a meaningful shareholder incentive to utilities that successfully achieve the savings targets. Based on Concentric’s jurisdictional research, however, it is difficult to find states or provinces that have successfully achieved the appropriate balance between savings targets, DSM budgets, and shareholder incentives. For example, Minnesota and Rhode Island both have savings targets in the range of 0.75% to 0.80%. In Rhode Island, National Grid had a 2012 DSM budget equal to 7.75% of gas distribution revenues and earned a shareholder incentive of approximately 4.50% of the approved 2012 DSM budget. In Minnesota, Northern States Power (Xcel Energy) had a 2012 DSM budget equal to 6.45% of gas distribution revenues and earned an unspecified shareholder incentive in 2012. Minnesota has opened a proceeding to review the level of shareholder incentives for energy efficiency, but a decision has not been made. On the higher end, in Massachusetts, National Grid had a savings target of 1.0% in 2012, a DSM budget equal to more than 14% of gas distribution revenue, and the opportunity to earn a shareholder incentive from a statewide pool based on its share of energy savings achieved. On the lower end, in

³¹ ACEEE, 2013 State Energy Efficiency Scorecard, at 12.

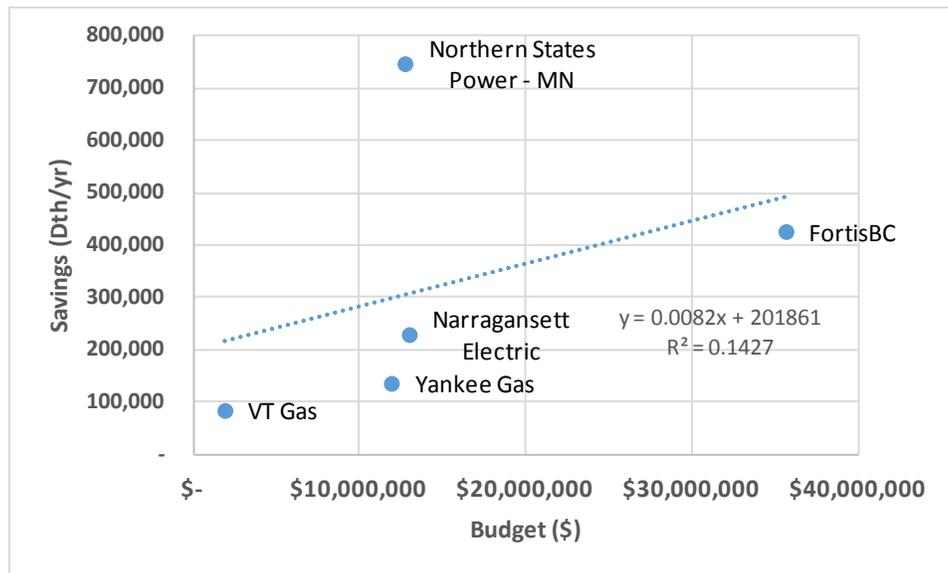
³² Ibid, at 28-29.

Ontario Energy Board – Supplemental Report – Review of Gas DSM

Connecticut, Yankee Gas had a savings target of 0.60% in 2012, a DSM budget equal to 3.22% of gas distribution revenue, and was eligible to earn a shareholder incentive of 5% of the approved DSM budget for achieving 100% of the target.

Chart 5 examines the correlation between savings and DSM budgets for U.S. and Canadian jurisdictions for which data are available. As shown on Chart 5, the correlation between savings and DSM budgets is low (approximately 38%) based on this limited data sample. However, four of the five data points suggest a much higher correlation between savings and DSM budgets (approximately 95%). One outlier (Northern States Power – Minnesota) significantly skews this relationship.

Chart 5: Savings and DSM Budgets



In conclusion, based on Concentric’s jurisdictional review, the following recommendations are consistent with our research and would balance competing interests:

- 1) Annual savings targets of 0.75% to 0.85% of retail sales, increasing gradually from current levels over the term of the DSM plan;
- 2) DSM budgets equal to approximately 6% to 7% of gas distribution revenue; and
- 3) Shareholder incentive of approximately 5% of DSM budget for achieving 100% of savings targets, 10% for achieving 150% of savings targets, and 3% for achieving 75% of savings targets.